FACT SHEET FOR NPDES PERMIT NO. WA0020303

City of Orting Wastewater Treatment Plant

TABLE OF CONTENTS

Page

TABLE OF CONTENTS (cont.)

Page

INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's (Department) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits [Chapter 173-220 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant:	City of Orting P.O. Box 489, Orting, WA
Facility Name and Address:	City of Orting Wastewater Treatment Plant 902 Rocky Road NE – approximately 0.6 miles NE of City Hall Orting, Pierce County, WA
Type of Treatment:	Municipal Secondary (SBR) with UV Disinfection
Discharge Location:	Carbon River at Orting, river mile 2 Latitude: 47° 06' 34" N Longitude: 122° 12' 51" W.

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

A major expansion to the wastewater treatment facility is under construction. The new plant is scheduled for completion in early 1999. The treatment plant will be a Sequencing Batch Reactor (SBR) secondary treatment facility with ultraviolet disinfection and a sludge storage lagoon. This permit will be issued for the new facility.

HISTORY

The original Orting wastewater treatment plant was an Imhoff system built in the early 1940s. An aerated lagoon was constructed in 1972. The lagoon was upgraded several times. In 1992, Orting prepared a General Sewer Plan/Engineering Report for a more advanced treatment plant. This report was amended in February 1997, to size a treatment plant which would accommodate both growth and the more stringent water quality-based requirements imposed by the Puyallup River TMDL and aquatic life toxicity. The treatment plant upgrades will be implemented in two Phases. Phase 1 Plans and Specifications have been approved.

COLLECTION SYSTEM STATUS

According to the NPDES permit application, the existing collection system is a conventional sanitary collection system serving a population of 3,700. The collection system is constructed principally of concrete pipe ranging in size from 6-inch to 21-inch diameter. There are four lift stations. The main interceptor line and service line to the Soldiers Home and the High Cedars development force main were constructed in the 1970s. Much of the remainder of the system is over 40 years old. The 1997 General Sewer Plan Amendment modifies the Orting service area to coincide with the established urban growth boundary designated under the Growth Management Act (GMA). The only exception is the High Cedars Development which preceded the GMA requirements. The projected population for the approved Phase 1 is 4,911. Phase one corresponds closely to the 20-year populations projections designated for Orting by Pierce County. The Amendment also adopts the state Criteria for Sewage Works Design as the minimum design criteria for the construction of all proposed sewers and pump stations.

The collection system has considerable infiltration and inflow (I/I) which Orting has been working to eliminate. The City is under Administrative Order DE 93WQ-S268 for reduction of excessive infiltration and inflow. The order also prohibits new sewer connections until the treatment plant upgrades are complete and capacity is available. As one requirement of the Order, Orting submitted an Engineering Analysis in May 1998, and is implementing corrective measures.

Orting has also documented existing septic tanks within the service area and will require connection when sewer service is available to the identified properties.

TREATMENT PROCESSES

The new Phase 1 wastewater treatment plant consists of a rotary fine screen and screening compressor, influent Parshall flume, influent pump station, grit removal, two SBR basins and sludge pumps, equalization basin, blower/control building, UV disinfection, effluent flow measurement, a laboratory and a sludge storage lagoon. The facility is designed for a Phase 2 expansion to a third SBR unit for projected ultimate build-out. The treatment plant is also retaining the existing chlorine disinfection facility for possible water reclamation and reuse at some future date.

The treatment plant is classified as Class II reliability which requires standby equipment and power for pumping, aeration and disinfection. Alarms are required to monitor equipment failure, loss of power, disinfection, high water level and other critical components. An auto-dialer notification system is also planned for the new plant.

There are no significant industrial facilities present or planned for Orting at this time. The new treatment plant will be a Class II facility for operator certification requirements. Orting currently has 2.4 full time employees budgeted to wastewater treatment including the collection system and lift stations, stormwater, new construction inspections, laboratory, and administration. The operator in charge is certified at the Class 2 level.

Staffing hours will increase with the new, more sophisticated treatment plant and laboratory. Orting will need additional employee hours for necessary laboratory work, monitoring requirements and process control testing. The draft Operations and Maintenance (O&M) manual states that at least 1.5 full-time employees are necessary for adequate treatment plant operation and maintenance. A minimum of two full-time treatment plant staff will be necessary during the initial months of plant start-up, troubleshooting and training. These numbers are for adequate treatment plant personnel. Orting will need additional personnel for the sanitary and stormwater collection system and lift station inspection and maintenance and new construction inspections.

DISCHARGE OUTFALL

The Carbon River is a glacial fed river and is frequently changing course. Migrating sandbars would render a submerged outfall inoperable. For maintenance reasons the Department of Fish and Wildlife has indicated a strong preference for side bank discharges. Therefore, the final treated and disinfected effluent is discharged continuously from the levee on the left bank of the Carbon River.

RESIDUAL SOLIDS

Treatment units remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the SBR units, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill. Waste solids removed from the SBR units will be stored in the existing lagoon. Under federal and state regulations, Orting has a two year period in which the storage is considered temporary and not subject to sludge disposal requirements.

PERMIT STATUS

The previous permit for this facility was issued on June 30, 1994. The permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), pH, fecal coliform bacteria, chlorine, ammonia, copper, and mercury. The permit also required monitoring for whole effluent toxicity. In April 1997, the permit was modified to remove the limits and monitoring requirements for copper and mercury. Monitoring conducted by the Department and the Permittee showed no reasonable potential to exceed the permit limits. In addition, the effluent monitoring would not accurately characterize the effluent from the new treatment facility.

An application for permit renewal was submitted to the Department on November 3, 1998, and accepted by the Department on January 7, 1999.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection on August 4, 1998. During the last five years, Orting has had several effluent limit violations. The most frequent violations have been for fecal coliform bacteria, ammonia and BOD. From January 1995, to December 1998, the Department's enforcement tracking shows 16 violations of the 85 percent removal requirement for BOD, 5 violations for the monthly BOD effluent concentrations and loadings, 13 violations for monthly average ammonia concentrations, 17 violations of the weekly average fecal coliform bacteria limit. Violations appear to be related to high flows at the treatment plant during storm events, as well as a missed compliance deadline for meeting final ammonia limits. Fecal coliform violations may also be due to re-contamination in the effluent polishing pond. Orting also reported two bypasses of untreated, disinfected wastewater discharged to the Carbon River and one sewer leak resulting in soil contamination.

The City is under Order No. DE 93WQ-S268, Second Amendment, to aggressively pursue I/I reduction and to delay further hookups to the collection system until the new treatment plant is online.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the National Pollutant Discharge Elimination System (NPDES) application and in discharge monitoring reports (DMR). For the past year, the lagoon effluent is characterized as follows:

Table 1: Lagoon Effluent Wastewater Characterization

Parameter	Monthly Averages 1998
Monthly Average Flow	0.3 to 1.05 MGD
pH	6.8 to 7.3 standard units
Temperature (winter)	52 to 59 degrees F
Temperature (summer)	59 to 68 degrees F
Fecal Coliform Bacteria	Up to 1305 cfu/100ml.
BOD	17-31 mg/L
Chlorine Residual	Nondetect
Total Suspended Solids	7-18 mg/L
Ammonia(as N)	6.8-22 mg/L
Dissolved Oxygen	1.5 - 3.8
Nitrate	0.6-6.1 mg/L
	1997 Ecology Metals Study
Copper (Total Recoverable)	8.5-14.3 ug/L
Mercury	<0.05-0.075 ug/L
Hardness	25.1-109 mg/L as $CaCO_3$
	use 2nd low value of 93.1
	1993 Puyallup TMDL
Alkalinity	170-190 mg/L
Zinc (Total Recoverable)	45 ug/L

Table 2: Predicted SBR Effluent Wastewater

Parameter	Monthly Averages
Monthly Average Flow	0.4 to 1.2 MGD
pH	6 to 9 standard units
Temperature (winter)	45 to 55 degrees F
Temperature (summer)	63 to 68 degrees F
Fecal Coliform Bacteria	Less than 200 cfu/100ml.
BOD	Less than 30 mg/L
Chlorine Residual	None
Total Suspended Solids	Less than 30 mg/L
Ammonia(as N)	5-12 mg/L
Nitrate	0.6-6.1 mg/L
Dissolved Oxygen	2-5 mg/L
Metals	less than lagoon effluent

SEPA COMPLIANCE

The City of Orting issues a Determination of Nonsignificance for the treatment plant expansion on September 16, 1996.

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology and water quality-basis. The limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. The Department does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from the February 1997 Amendment to the General Sewer Plan and Engineering Report prepared by Parametrix, Inc., approved by the Department March 1997 and are as follows:

Table 3: Design Standards for City of Orting WWTP.

Parameter	Design Quantity
Monthly average flow (max. month)	1.2 MGD
Peak day flow (maximum)	3.4 MGD
Monthly average dry weather flow	0.5 MGD
Peak day flow (dry weather)	0.8 MGD
BOD_5 influent loading	1270 lbs/day
TSS influent loading	1554 lbs/day
Design population equivalent	4911

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD_5, and TSS are taken from Chapter 173-221 WAC are:

Table 2: Technology-based Limits.

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD_5 (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

For BOD, monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly influent design loading (1270 lbs/day) x 0.15 = 190.5 lbs/day.

The weekly average BOD effluent mass loading is calculated as 1.5 x monthly loading = 286 lbs/day.

For TSS, monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly influent design loading (1554 lbs/day) x 0.15 = 233 lbs/day.

The weekly average TSS effluent mass loading is calculated as 1.5 x monthly loading = 350 lbs/day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow the Department to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to the Carbon River which is designated as a Class A receiving water in the vicinity of the outfall. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum
Temperature	18 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

PUYALLUP RIVER BASIN TOTAL MAXIMUM DAILY LOAD FOR BOD AND AMMONIA

Section 303(d) of the Clean Water Act requires states and the Environmental Protection Agency to establish total maximum daily loads (TMDLs) for waters which cannot meet water quality standards after application of technology based controls. Due to the potential for dissolved oxygen problems in the lower Puyallup River, the Department established a seasonal TMDL for ammonia and biochemical oxygen demand (BOD) throughout the Puyallup River basin and tributaries effective May 1 through October 31. The maximum loadings established for this river basin were set a 20,322 pounds per day of BOD5 and 3350 pounds per day of ammonia as N. This includes an unallocated reserve capacity of 3670 pounds per day of BOD5 and 1200 pounds per day of ammonia.

Wasteload allocations (WLAs) established for the Orting Wastewater Treatment Plant discharge are 221 pounds per day of BOD5 and 186.5 pound per day of ammonia as N.

The TMDL also provides an option to dischargers allowing them to reduce the WLA for ammonia for an increase in the WLA for BOD5 since both parameters together influence dissolved oxygen. For each pound of ammonia reduction, the WLA for BOD5 may increase by 13.4 pounds per day. The net effect of this change in the allocation is consider negligible.

In addition, a mediation settlement on May 29,1998 established a process for allocation of the reserve capacity. A municipal reserve account was established for the City of Orting as 74 pounds/day of BOD5 and 24.5 pounds/day of ammonia (or 402 pounds/day of BOD5 if ammonia allocation was exchanged according to the procedure mentioned above). This reserve account may be accessed in accordance with the provisions of the settlement agreement.

At this time, the City of Orting has not proposed to request any portion of their reserve account. The Engineering Report submitted to the Department for the plant expansion does use the BOD5/ammonia exchange ratio of 13.4 to 1. For the Phase 1 expansion, the BOD WLA increases from 221 to the technology based maximum of 286 pounds/day. The ammonia WLA therefore must decrease by five pounds to 181 pounds.

For the future proposed Phase 2 expansion, the BOD WLA is projected to increase to 489 pounds per day and ammonia decrease to 167 pounds per day.

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

The Carbon River is glacially fed and tends to meander varying in both course and width from year to year. River flows general peak in June during the snow melt. Annual minimum flows generally occur during the months of August, September, and October. The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of the flow restriction of 25 percent and 2.5 percent of the river volume during critical conditions. In accordance with the Department's Permit Writer's Manual, historic maximum day and average monthly flows for May through October 1997-98 were used in the calculation of dilution factors. Although Orting has made progress in I/I correction, these values are still higher than the Phase 1 dry weather design flows. Dilution factors are shown below.

	Acute	Chronic
Aquatic Life	3.6	35

The dilution factors were calculated as follows:

- Ambient 7Q10 low flow: 148 cfs = 95.6 MGD
- Maximum day dry season 1997-98 flow (May-October) 0.9 MGD
- Maximum monthly average dry season 1997-98 (May-October) = 0.6 MGD

Acute Zone:

(Maximum day dry weather flow (MDDWF) +0.025*7Q10)/MDDWF

= (0.9MGD + 0.025*95.6 MGD)/0.9MGD = 3.6

Chronic Zone:

(Monthly average dry weather flow (MADWF) +0.25*7Q10)/ MADWF

= (0.7MGD + 0.25*95.7MGD)/0.7MGD = 35

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the Carbon River is the seven day average low river flow with a recurrence interval of ten years (7Q10). Ambient data at critical conditions in the vicinity of the Orting outfall was taken from the TMDL study which considered both historical data and an intensive monitoring study conducted in September-October 1990, the Puyallup Basin Metals Survey, April 1997 and ambient data collected by Ecology's Environmental Assessment Unit over the past few years. The ambient background data used for this permit includes:

Parameter	Value used
7Q10 low flow	148 cfs
Velocity	2.18 ft/sec
Depth	0.96 feet
Width	70.8 feet

Roughness (Manning)	n = 0.039
Slope	4.12 E-03 (0.24 degrees)
Temperature	15^{o} C
pH (high)	8.0
Dissolved Oxygen	8.0 mg/L
Total Ammonia-N	0.15 mg/L
Fecal Coliform	41/100 mL dry weather
Conductivity	70
Turbidity	20 NTU
Hardness	21.6 mg/L as CaCO3
Alkalinity	30
Zinc(dissolved)	3.6 ug/L
All Other Metals (dissolved)	below detection limits

The impacts of dissolved oxygen deficiency, temperature, pH, fecal coliform, chlorine, ammonia, metals, and other toxics were determined as shown below, using the dilution factors described above.

Temperature--The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 15 degrees Celsius and the effluent temperature is 20 degrees Celsius. (20 + (35-1)*15)/15 = 15.1

The predicted resultant temperature at the boundary of the chronic mixing zone is 15.1 degrees Celsius and the incremental rise is 0.1 degrees Celsius.

Temperature and pH--The impact of pH and temperature were modeled using the calculations from EPA, 1988. The input variables were dilution factor 35, upstream temperature 15 degrees Celsius, upstream pH 8.0, upstream alkalinity 30 (as mg $CaCO_3$/L), effluent temperature 20 degrees Celsius, effluent pH of six, effluent pH of nine, and effluent alkalinity 170 (as mg $CaCO_3$/L).

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitations for pH was placed in the permit and temperature was not limited.

Fecal Coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 35.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: ammonia, copper, mercury and zinc. A reasonable potential analysis (See Appendix C) using the lagoon effluent parameters was conducted to determine whether or not effluent limits should be required in this permit.

The determination of the reasonable potential to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The critical condition in this case occurs during 7Q10 low flow conditions. The parameters used in the critical condition modeling are as follows: acute dilution factor 3.6, chronic dilution factor 35, receiving water temperature 15 degrees Celsius, receiving water alkalinity 30 (as mg $CaCO_3$/L), hardness 21.6 mg/L, ammonia 0.15 mg/L, zinc 3.6 ug/L and all other metals as non-detect.

Hardness is calculated by simple mixing with the effluent hardness at the mixing zone boundaries.

Acute boundary hardness is (90 + 21.6*2.6)/3.6 = 40.6 mg/L

Chronic boundary hardness is (90 +21.6*34)/35 = 23.6

Translator values for metals were taken from Table VI-A1. of Ecology's Permit Writer's Manual based on data from rivers in Washington State. Annual data was used so 95th percentile values were used.

Ammonia toxicity criteria are based on a relationship with temperature and pH with pH the more sensitive parameter. For the 1997Facilities Plan, Orting used historical data providing a correlation between temperature and pH as an alternative method to calculate the critical 90th percentile. A Department study title Puyallup Basin Treatment Plant Metals Survey, April 1997, provides additional ambient monitoring pH data collected during 1995-6. Of the five pH values measured in the Carbon River near Orting, four are above the 90th percentile value from historical data. Temperature values are similar to the historical data. Values for temperature and pH from that study are shown below:

Date	**pH**	**Temp (Celsius)**
September 1995	7.84	13.1
October 1995	8.39	14.3
November 1995	7.05	9.4
March 1996	7.64	7.3
May 1996	8.17	11.4

Since it appears that ambient pH may have increased from historical values, a pH of 8.0 is used in this permit to estimate critical conditions for ammonia toxicity.

Calculations using all applicable data resulted in a determination that there is no reasonable potential for this discharge to cause a violation of water quality standards for mercury or zinc. This determination assumes that the Permittee meets the other effluent limits of this permit.

Effluent limits were derived for ammonia and copper which were determined to have a reasonable potential to cause a violation of the Water Quality Standards. Effluent limits were calculated using methods from EPA, 1991. The resultant effluent limits are as follows:

	Monthly Average	**Daily Maximum**
Ammonia as N	9 mg/L	20 mg/L
Copper (Total Recoverable)	18 ug/L	26 ug/L

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC_{50}, $EC_{50,}$ IC_{25}, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center 360-407-7472 for a copy. The Department recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

An effluent characterization for acute and chronic toxicity was conducted during the previous permit term. In accordance with WAC 173-205-060, the Permittee must repeat this effluent characterization for the following reason:

The average dry weather flow volume has changed by ten percent or more due to increases in the number of users. In accordance with WAC 173-205-060(1), the proposed permit requires another effluent characterization for toxicity.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health, or, (3) does not contain chemicals of concern based on existing data or knowledge. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED JUNE 30, 1994

Parameter	***Existing:***		***Proposed:***	
	Monthly	**Weekly**	**Monthly**	**Weekly**
BOD	30 mg/L 147 lbs/day 85 percent removal	45 mg/L 221 lbs/day	30 mg/L 190.5 lbs/day 85 percent removal	45 mg/L 286 lbs/day
Parameter	***Existing:***		***Proposed:***	
TSS	30 mg/L 120 lbs/day 85 percent removal	45 mg/L 180 lbs/day	30 mg/L 233 lbs/day 85 percent removal	45 mg/L 350 lbs/day
pH	6-9 standard units		6-9 standard units	
Fecal Coliform	200/100ml	400/100ml	200/100ml	400/100ml
Ammonia as N (May 1 - Oct 31)	14 mg/L	26 mg/L 186. lbs/day	9 mg/L	20 mg/L 181 lbs/day
Copper		52 μg/L	18 μg/L	26 μg/L
Chlorine	27.5 μg/L	72 μg/L	UV disinfection	----

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is

consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 1994) for activated sludge facilities less than 2 MGD.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* The laboratory at this facility is currently accredited for ammonia, nitrate, residual chlorine, dissolved oxygen and pH. Upon construction of the new laboratory, Orting may request performance evaluation samples for biochemical oxygen demand and total suspended solids. The laboratory will be accredited for these parameters and for fecal coliform upon successful completion of the performance evaluation samples and the on-site procedures audit.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment. The proposed permit requires submission of an updated O&M manual for the entire sewage system

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the Tacoma-Pierce County Health Department.

PRETREATMENT

Federal and State Pretreatment Program Requirements

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), the Department of Ecology (Department) has been delegated authority to administer the Pretreatment Program [i.e. act as the Approval Authority for oversight of delegated Publicly Owned Treatment Works (POTWs)]**.** Under this delegation of authority, the Department has exercised the option of issuing wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue wastewater discharge permits.

There are a number of functions required by the Pretreatment Program which the Department is delegating to such POTWs because they are in a better position to implement the requirements (e.g. tracking the number and general nature of industrial dischargers to the sewerage system). The requirements for a Pretreatment Program are contained in Title 40, part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program [40 CFR 403.8(f)(1)(iii)], the Department is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) [40 CFR 403.8 (f)(1)(i)].

The Department is responsible for issuing State Waste Discharge Permits to SIUs and other industrial users of the Permittee's sewer system. Industrial dischargers must obtain these permits from the Department prior to the Permittee accepting the discharge [WAC 173-216-110(5)]. Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit. Such dischargers should contact the Department to determine if a permit is required.). Industrial dischargers need to apply for a State Waste Discharge Permit sixty days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges, loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with State water quality standards and biosolids standards.

The Department requires this POTW to fulfill some of the functions required for the Pretreatment Program in the NPDES permit (e.g. tracking the number and general nature of industrial dischargers to the sewage system). The POTW's NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from the Department. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities (40 CFR 403.12(j) and WAC 173-216-070 and WAC 173-240-110, et seq.).

Wastewater Permit Required

RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without authorization from the Department.

Requirements for Routine Identification and Reporting of Industrial Users

The NPDES permit requires non-delegated POTWs to " take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the Permittee's sewerage system". Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in

identifying and reporting as-yet unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify an industrial discharger, in writing, of their responsibilities regarding application for a state waste discharge permit and to send a copy of the written notification to the Department. The Department will then take steps to solicit a state waste discharge permit application.

Annual Submittal of List of Industrial Users

This provision requires the POTW to submit annually a list of existing and proposed SIUs and PSIUs. This requirement is intended to update the Department on an annual basis of the status of industrial users in the POTW's service area, without requiring the POTW to go through the process of performing a formal Industrial User Survey. This provision is normally applied to POTWs not serving industrial or commercial users. Although this permit does not require performance of an Industrial User Survey, the Permittee is nevertheless required under the previous section, to take adequate continuous routine measures to identify existing and new industrial discharges.

Duty to Enforce Discharge Prohibitions

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants which cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet..

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition wastes with excessive BOD, petroleum based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

Support by the Department for Developing Partial Pretreatment Program by POTW

The Department has committed to providing technical and legal assistance to the Permittee in fulfilling these joint obligations, in particular assistance with developing an adequate sewer use ordinance, notification procedures, enforcement guidelines, and developing local limits and inspection procedures.

OUTFALL EVALUATION

Proposed permit condition S.10. requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to determine if sediment is accumulating in the vicinity of the outfall.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 relates to permit renewal. Condition G8 prohibits the reintroduction of removed substances back into the effluent. Condition G9 states that the Department will modify or revoke and reissue the permit to conform to more stringent toxic effluent standards or prohibitions. Condition G10 incorporates by reference all other requirements of 40 CFR 122.41 and 122.42. Condition G11 notifies the Permittee that additional monitoring requirements may be established by the Department. Condition G12 requires the payment of permit fees. Condition G13 describes the penalties for violating permit conditions.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue (or issue) a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on August 30, 1998, and September 6, 1998, in the *Tacoma New Tribune* to inform the public that an application had been submitted and to invite comment on the reissuance (or issuance) of this permit.

The Department will publish a Public Notice of Draft (PNOD) to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6279, or by writing to the address listed above..

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10 percent by volume and the receiving water 90 percent.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both state and federal laws.

Pass through -- A discharge which exits the POTW into waters of the state in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of state water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of seven is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 percent of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

   Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

   *The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at http.www:wa.gov.ecology.

APPENDIX D--RESPONSE TO COMMENTS
City of Orting Wastewater Treatment Plant

This response to comments (RTC) is an appendix to the fact sheet for the above referenced NPDES permit. The RTC summarizes comments received during the 30-day public notice and comment period on the draft permit, and provides the Department of Ecology (Department) response. All changes to the draft permit are noted below. The Department has determined to issue this permit as revised.

Comments were received from the City of Orting and from the Muckleshoot Tribe.

City of Orting Comments:

1. Comment:

Latitude listed in both the permit and fact sheet should be 47° 06"34"

Response:

Thank you. Correction made to permit.

2. Comment:

Ecology issued a modification to the existing NPDES permit (March 20, 1997) curtailing the requirements for copper and mercury monitoring after determining that there was no reasonable potential to exceed water quality standard.

Furthermore, the permit modification states "Statistical analysis of parameter data sets indicates that copper concentrations are associated with Total Suspended Solids (TSS) concentrations. It is suggested that reducing TSS may be a means of controlling the metals. Their [Orting's} efforts toward I/I reduction and treatment plant improvements should further reduce the concentrations of copper and zinc discharge".

Response:

Metals limits are based on new dilution factors for the new treatment plant and existing copper data in the effluent. Reasonable potential can only be assessed by monitoring the actual effluent discharged and applying it to the criteria. Since potential is indicated, a limit is necessary. Since this facility has been constructed to accommodate anticipated growth over the life of the permit, it is also a reasonable assumption that as the flows and loadings increase over the life of the permit, the potential to exceed copper limits may also increase. If, as hoped, the first year of monitoring shows no reasonable potential to exceed the copper limits, it would be appropriate to reduce the amount of monitoring required to four sampling events per year for the duration of the permit.

***Change to Permit:**

Add the following footnote language to permit condition S2.A:

"If analyses of the first two years of data indicate no reasonable potential to exceed the Total Recoverable Copper effluent limitations in Condition S1A. of this permit, then effluent monitoring for Copper and Hardness may be reduced to 1 sample/3 months."

3. Comment:

Fact Sheet, page 15. We understand that operation and maintenance manual is for the wastewater treatment plant, not the "entire sewerage system". Operation and Maintenance Manuals for lift stations are separate from the WWTP O&M Manual currently being prepared.

Response:

WAC 173-240-020 (5) defines a domestic wastewater facility as all structures, equipment or processes required to collect, carry away, treat, reclaim or dispose of domestic wastewater. The O&M manual should include the collection system as well as the treatment plant. If the sections on the collection system are not up-to-date then that update should be included with the submitted manual.

No Changes to Permit:

The Muckleshoot Indian Tribe Comments:

1. Comment:

The complete text of the Muckleshoot comment is attached.
Summary of Key Points:

1. The draft permit should be subjected to federal consultation as required under Section 7 of the ESA.

2. It would be appropriate to eliminate the mixing zone provision and require water quality standards to be met at the point of discharge. Temperature and pH were mentioned as specific concerns.

Response:

The effluent limitations in the permit are based upon Discharge Standards and Effluent Limitations for Domestic Wastewater Facilities (Chapter 173-221 WAC) and State Water Quality Standards (Chapter 173-201A WAC). These standards were established for the protection of the present and potential uses of the receiving waters including aquatic life protection. Currently, state regulations allow for dilution factors in establishing compliance with state water quality standards.

Based on monitoring data received, effluent pH has not exceeded the water quality standards. Effluent temperature has rarely exceeded the standards and has no potential to do so at mixing zone boundaries. Also, effluent temperatures in the new SBR treatment plant are anticipated to be lower than for the lagoon system. Furthermore, the City of Orting has characterized their effluent for potential sources of toxicity through whole effluent toxicity testing. The tests have not indicated any significant source of toxicity.

The proposed permit is in conformance with existing laws and regulations. The Department believes that writing a new draft permit is premature and improper without first adopting any new potential and relevant changes in its regulations, if necessary. Any potential changes to the existing state water quality standards are appropriately addressed through the triennial review process currently used for revision of WAC 173-201A.

NO CHANGES TO PERMIT